Claims

1. A carboxylic acid group containing amorphous polyester having an acid number of from 12 to 34 mg KOH/g and prepared from a polyacid constituent comprising from 81 to 100% mole of isophthalic acid and from 0 to 19% mole of another aliphatic, cycloaliphatic or aromatic polyacid, and of a polyol constituent comprising from 15 to 65% mole of one or more linear chain aliphatic C4 – C16 diol, from 35 to 85% mole of neopentyl glycol, from 0 to 50% mole of another linear chain aliphatic and/or cycloaliphatic diol and from 0 to 5% mole of a polyol with 3 or more hydroxyl groups.

2. The carboxylic acid group containing amorphous polyester according to claim 1 which is characterised by
   - a number averaged molecular weight ranging from 2500 to 8600, preferably from 3300 to 7500 as measured by gel permeation chromatography (GPC)
   - a glass transition temperature Tg from 40 to 80°C and preferably from 56 to 70°C as measured by differential scanning calorimetry (DSC) according to ASTM D3418 with a heating gradient of 20°C per minute
   - an ICI (cone/plate) viscosity accordingly to ASTM D4287, measured at 200°C ranging from 5 to 15000 mPa.s

3. The carboxylic acid group containing amorphous polyester according to claim 1 or 2, characterised in that the 0 to 19% mole of the aliphatic, cycloaliphatic or aromatic polyacids, other than isophthalic acid is selected from fumaric acid, maleic acid, phthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,2 -cyclohexanedicarboxylic acid, succinic acid, adipic acid, glutaric acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, 1,12-dodecanedioic acid, trimellitic acid, pyromellitic acid, and the corresponding anhydrides.

4. The carboxylic acid group containing amorphous polyester according to any of claims 1 to 3, characterised in that the 15 to 65% mole of linear chain aliphatic C4-C16 diols are selected from 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,12-dodecanediol, 1,14-tetradecandiol, 1,16-hexadecandiol, used in a mixture or alone, in that the 0 to 50% mole of the other linear chain aliphatic and/or cycloaliphatic diol is selected from ethylene glycol, propylene glycol, 1,4-cyclohexanediol, 1,4-cyclohexanedimethanol, hydrogenated Bisphenol A, and in that the 0 to 5% mole

of the polyol having 3 or more hydroxyl groups is selected from trimethylolpropane, ditrimethylolpropane, pentaerythrytol, used in a mixture or alone.

5. The carboxylic acid group containing amorphous polyester according to any of claims 1 to 4 characterised in that it is composed of a polyacid constituent comprising from 81 to 100% mole of isophthalic acid and from 0 to 19% mole of terephthalic acid and /or 1,4-cyclohexanedicarboxylic acid and of a polyol constituent comprising from 15 to 65% mole of linear chain aliphatic C4-C16 diol, preferably 1,6-hexanediol, from 35 to 85% mole of neopentyl glycol, from 0 to 50% mole of ethylene glycol and from 0 to 5% mole of trimethylolpropane.

6. Powdered thermosetting compositions, characterised in that they comprise:
   a) a carboxylic acid group containing amorphous polyester according to any of the preceding claims
   b) a cross-linking agent having at least two β-hydroxyalkylamide groups.

7. Powdered thermosetting compositions according to claim 6, comprising:
   - from 50 to 98 weight % of carboxylic acid group containing amorphous polyester
   - from 1 to 10 weight % of β-hydroxyalkylamide cross-linking agent
   - from 0 to 10 weight % of one or more UV light absorbers, stabilisers, flow control agents, degassing agents
   - from 0 to 49 weight % pigments and/or dyes.

8. Process for coating an article, characterised in that powdered thermosetting compositions according to any of claims 6 to 7 are applied by an electrostatic or friction charging gun, or in a fluidised bed, and in that the coating thus obtained is heated at a temperature of from 140 to 250°C.

9. Substrate entirely or partially coated by the process of claim 8.